

## Effect of the Significant Loss of Salt in Sweat



**To the Editor:** The review article on the health benefits of sauna bathing in the August 2018 issue<sup>1</sup> appeared comprehensive but failed to mention the effect of the significant loss of salt in sweat that occurs with this clearly beneficial event repeated on a regular basis. Wouldn't most—if not all—of these benefits occur simply as a result of regularly repeated substantial losses of salt from the body? Is this counter-balanced by the consumption of salt-preserved fish in Finland?

I am old enough to remember the recommendation of hot baths for renal failure when dialysis was not available.

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**Potential Competing Interests:** The author reports no competing interests.

1. Laukkanen JA, Laukkanen T, Kunutsor SK. Cardiovascular and other health benefits of sauna bathing: a review of the evidence. *Mayo Clin Proc.* 2018; 93(8):1111-1121.

<https://doi.org/10.1016/j.mayocp.2018.12.022>

## Sauna Bathing and Healthy Sweating: II



**To the Editor:** In their review on Cardiovascular and Other Benefits of Sauna Bathing, Laukkanen et al<sup>1</sup> observed that, in a previous population cohort study, they detected that frequent use of sauna bathing (4 to 7 times a week), showed a 66% reduction in dementia in Finnish men compared with those who had 1 session per week. Regarding a possible mechanism for such a dramatic effect, toxicologists have shown that sweating is a major means of excreting both

organochlorine pesticides<sup>2</sup> and a variety of toxic metals including cadmium, lead, and aluminum.<sup>3</sup> Surprisingly, substantially more of these toxic substances can be excreted via sweat than by urine, so increasing sweating became an effective means of enhancing excretion of toxic substances. Rea reported that the use of sauna therapy improved the condition of patients with confirmed exposure to mold (including stachybotrys), those who had mycotoxins (including ochratoxin) in their urine, and patients who had impaired neurocognitive testing or autonomic nervous system testing results and whose conditions were refractory to other treatments.<sup>4</sup> In a review of the high prevalence of fatal dementia in Finland,<sup>5</sup> I noted that the frequent presence of mold in residential buildings is one of the contributing factors there. Similar problems with moldy environments exist throughout the world and are certainly common in the United States and Canada, 2 other countries with very high rates of dementia. A prospective clinical trial of sauna therapy for patients with early dementia who test positive for mycotoxins, toxic metals, or organic toxins appears warranted and feasible. Although this type of therapy is one of several promising new approaches to preventing or treating dementia, it should not be overlooked simply because it is unconventional.

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**Potential Competing Interests:** The author reports no competing interests.

1. Laukkanen JA, Laukkanen T, Kunutsor SK. Cardiovascular and other health benefits of sauna bathing: a review of the evidence. *Mayo Clin Proc.* 2018; 93(8):1111-1121.
2. Genius SJ, Lane K, Birkholz D. Human elimination of organochlorine pesticides: blood, urine, and sweat

study. *BioMed Res Int.* 2016. <https://doi.org/10.1155/2016/1624643>.

3. Genius SJ, Birkholz D, Rodushkin I, Beesoon S. Blood, urine, and sweat (BUS) study: monitoring and elimination of bioaccumulated toxic elements. *Arch Environ Contam Toxicol.* 2011;61(2):344-357.
4. Rea WJ. A large case-series of successful treatment of patients exposed to mold and mycotoxin. *Clin Ther.* 2018;40(6):889-893.
5. Eiser AR. Why does Finland have the highest dementia mortality rate? Environmental factors may be generalizable. *Brain Res.* 2017;1671:14-17.

<https://doi.org/10.1016/j.mayocp.2018.12.021>

## In reply—Sauna Bathing and Healthy Sweating



**To the Editor:** We thank Eiser and Brooks for their comments about the health benefits of sauna bathing. Regular sauna bathing has some beneficial effects on blood pressure, cardiometabolic biomarkers, arterial compliance, and cardiovascular function.<sup>1</sup> Our prospective studies have shown that higher frequency and duration of sauna bathing are related to a lower risk of cardiovascular mortality, sudden cardiac death, stroke, hypertension, pulmonary diseases, and dementia.<sup>1-3</sup> The feelings of relaxation and promotion of mental health and well-being associated with sauna sessions might be linked to the increased production of circulating levels of hormones such as endorphins.<sup>1</sup> We have also reported an inverse association of frequency of sauna with several inflammatory markers, suggesting that the beneficial effect of sauna bathing on disease outcomes may in part be mediated via reduced inflammation.<sup>4</sup> The inverse associations between sauna bathing and adverse outcomes have persisted despite adjustments for socioeconomic status and physical activity, which are potential surrogate markers of healthy lifestyles.

In the typical warm and relatively dry Finnish sauna, skin blood flow usually increases from 5% to 10%,